



ACE Insurance Limited
Risk Management Services

AAA

PROPERTY LOSS CONTROL PROGRAM

for

XYZ LIMITED
ABC STREET
SAMPLE, NSW
AUSTRALIA

Submitted by: Colin Fewster
November 30, 1995

AAA - Property Loss Control Program

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Please note that this report does not imply that no other hazardous conditions exist. This report is restricted to the fire protection of assets and does not address the life safety aspects of fire protection.

The liability of ACE and the member or affiliated companies underwriting the risk shall be limited by the amount, terms and conditions of the policy. No liability shall be assumed by virtue of this advisory report.

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1. A SUMMARY OF OUR FINDINGS

FIRE SAFETY MANAGEMENT CONTROLS		
SECT.	CATEGORY	RATING
4.1	Documentation of Fire Safety Rules and Procedures	AAA
4.2	Housekeeping Standards	AA
4.3	Maintenance Standards	AAA
4.4	Electrical Installation Inspections	AA
4.5	Cutting and Welding Controls	AAA
4.6	Smoking Controls	AA
4.7	Self Inspection Procedures	AA
4.8	Fire Protection Training	AA
4.9	Watchman Service / Security	AAA
4.10	Fire Protection Equipment Impairment Procedures	AAA
FIRE PROTECTION FACILITIES		
SECT.	CATEGORY	RATING
4.11	Water Supplies for Fire Fighting Purposes	AAA
4.12	Fire Brigade Facilities	AAA
4.13	Automatic Sprinkler Systems	AA
4.14	Automatic Detection Systems	AAA
4.15	Fire Hydrants Systems	AA
4.16	Fire Hose Reels	A
4.17	Portable Fire Extinguishers	AAA
4.18	Fire Cut-Offs	AAA
4.19	Exposures	AAA
4.20	Special Hazard Management / Protection	AAA

2. EXECUTIVE SUMMARY

This was our first inspection of this site utilising our AAA Property Loss Control Report format. This report will evaluate twenty one separate categories in the areas of Management Controls and Fire Protection Facilities. Each category will be rated from A to AAA with an ongoing annual review aimed at maintaining or improving these ratings. Twelve of these twenty one categories have already received our AAA rating thus indicating a high level of management commitment to fire protection issues.

Since our last inspection in October 1993 there have only been minor changes in the operation and layout of the site. However further rationalisation of the operations at this site will be undertaken as the new XYZ Strathmerton site picks up different areas of production.

In the area of Fire Safety Management Controls we generally found that a high level of documentation and control was being maintained. We have however made several minor recommendations in the following areas which will allow all categories evaluated to be upgraded to AAA:-

- Housekeeping
- Electrical Installation Inspections
- Smoking Controls
- Self Inspections
- Fire Protection Equipment Training
- Contingency Planning

Fire protection of the site consists of sprinklers (both wet and dry), hydrant/hosereels, extinguishers, detection systems and special hazard systems (ie CO² and NAFS III). Over the past two years continual upgrades of the sites fire protection has seen Halon systems replaced, fire brigade booster connections installed, monitored isolation valves fitted to the hydrant system and a new main fire indicator panel installed.

We have made several recommendations relating the protection of the site with the main one relating to a full hydraulic analysis being undertaken of the sprinkler system. Currently there is no information available on site to indicate the design requirements of the sprinkler system. Given that the storage arrangements and heights of both finished goods and raw materials may have changed over the years since the sprinkler system was designed it is recommended that a full hydraulic analysis of the sprinkler system be undertaken. There appears to be several areas where sprinklers should be installed in the racking systems however this should be confirmed once the hydraulic analysis is completed. This will ensure that the sprinkler system is adequate to protect the current storage arrangements. We have also recommended that the sprinkler system be extended to protect the Engineering Workshop and the Wax Plant.

Other recommendations relating to fire protection include the documentation and extension of both the hydrant and hosereel system.

Flow tests of the sprinkler system pumps and the hydrant system were completed during this inspection and results have been included in this report.

We would like to thank local management for their assistance during our inspection, in particular:-

Mr Robert Carmen - Services Engineer.

3. RECOMMENDATIONS

Priority Recommendations

95-01 All charging of fork lift batteries should be conducted in the designated areas provided around the site.

COMMENT: The temporary battery charging of a fork lift with a pallet on was located in the kettle and jam section. Charging in areas that are not adequately ventilated or clear of combustibles is not acceptable as a fault in the charger or battery could easily start a fire.

95-02 The storage of idle pallets under the canopy adjacent to the Vegemite glass supply area should be reduced to a maximum of 2.1 m high.

COMMENT: Currently pallets are stored to approximately 4.0 m high. It is anticipated that the sprinkler system in this area is not adequate to protect the current height of pallet storage.

95-03 An annual inspection of the electrical installation should be undertaken by a suitably qualified contractor. This inspection should include the following areas:-

- Condition of main switch boards and sub-boards.
- Condition of wiring.
- Thermographic testing of all switch boards.

COMMENT: We were advised that Services Engineer was investigating the implementation of this.

95-04 A total "No Smoking" policy should be implemented throughout the site.

COMMENT: Of particular concern was the allowance of smoking both by truck drivers and employees in the covered way/truck loading bay. We would recommend that smoking in this area be banned immediately and appropriate signs posted. The "No Smoking" policy be extended to cover all areas of the site with the exception of "Designated Smoking Areas" located external and clear of all buildings.

95-05 Self inspections of fire hazards and equipment should be conducted using a check list format and inspections should be undertaken on a weekly basis.

COMMENT: Drafts of a proposed self inspection checklist were reviewed during our inspection and appeared to cover all areas required. However areas as described in section 4.7 should be included in the self inspection program.

95-06 Practical training in the use of extinguishers and hosereels should be provided to all production floor personnel and maintenance personnel. This training should be fully documented and completed on an annual basis.

COMMENT: This training should be in addition to that provided to fire teams, area wardens and wardens. Given the number of personnel on the site we have not recommended that all office and administration personnel be given training so long as wardens in these areas are adequately trained.

3. RECOMMENDATIONS (cont...).

95-07 A fully detailed and documented contingency plan should be drawn up. This plan should be reviewed/revised on a regular basis.

COMMENT: We were advised that this area was being addressed and that informal contingency plans were in place for the replacement of critical production machinery.

95-08 It is recommended that a full hydraulic analysis of the sprinkler system be undertaken.

COMMENT: There appears to be several areas where sprinklers should be installed in the racking systems however this should be confirmed once the hydraulic analysis is completed. There is no information available on site to indicate the design requirements of the sprinkler system. Given that the storage arrangements and heights of both finished goods and raw materials may have changed over the years since the shrinker system was designed a hydraulic analysis of the system will ensure that the sprinkler system is adequate to protect the current storage arrangements.

95-09 The sprinkler system should be extended to protect the engineering workshop and the wax plant.

95-10 It is recommended that a program be put in place to progressively upgrade the hydrant system by connecting existing hydrants to the sprinkler system pump boosted ring main. In the first instance it would be particularly prudent to connect those hydrants readily accessible to fire brigade personnel (ie. external to the building).

COMMENT: A flow test of the northern most hydrant at the rear of the boiler house (not boosted by the sprinkler pumps) indicated a static pressure of 600 kPa and a residual pressure of 300 kPa @ 725 L/Min. This result would indicate that hydrants that are not boosted would be totally inadequate for fire fighting purposes.

95-11 Plans of the hydrant system should be developed showing hydrant/hosereel locations, isolation valves, pipework runs and town main connection details.

COMMENT: This information is particularly valuable to fire brigade personnel in the event of an emergency and will aid in the maintenance of the system.

95-12 A review of the hosereel system coverage should be undertaken with a view to a progressive upgrade of the hosereel system to provide total coverage throughout the site and to comply with current Code and Authority requirements.

COMMENT: Fire hosereels provide excellent first aid fire fighting capabilities and are critical in the early attack of a fire.

Suggestions for Risk Improvement

None.

4. OUR FINDINGS IN DETAIL

4.1 DOCUMENTATION OF FIRE SAFETY RULES & PROCEDURES	AAA														
<p>Fire safety rules and procedures are an important management control tool. They provide guidelines, set goals and are the evidence of management commitment.</p> <p>A procedure manual should cover the following aspects</p> <table><tr><td>* Senior management policy statement</td><td>* Accountability and responsibility</td></tr><tr><td>* Cutting and welding controls</td><td>* Safe handling of flammable liquids</td></tr><tr><td>* Fire properties of materials stored on site</td><td>* Safe storage of flammable liquids</td></tr><tr><td>* Maintenance of fire protection equipment</td><td>* Operation of fire equipment</td></tr><tr><td>* Special hazards safety</td><td>* Staff training requirements</td></tr><tr><td>* Housekeeping standards</td><td>* Self Inspections</td></tr><tr><td>* Smoking Controls</td><td>* Fire protection impairment procedures</td></tr></table>		* Senior management policy statement	* Accountability and responsibility	* Cutting and welding controls	* Safe handling of flammable liquids	* Fire properties of materials stored on site	* Safe storage of flammable liquids	* Maintenance of fire protection equipment	* Operation of fire equipment	* Special hazards safety	* Staff training requirements	* Housekeeping standards	* Self Inspections	* Smoking Controls	* Fire protection impairment procedures
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* Maintenance of fire protection equipment	* Operation of fire equipment														
* Special hazards safety	* Staff training requirements														
* Housekeeping standards	* Self Inspections														
* Smoking Controls	* Fire protection impairment procedures														
<p>RATINGS:</p> <p>SD Serious deficiencies.</p> <p>A Some fire safety rules or procedures are in operation but are not documented or adequate.</p> <p>AA Fire safety rules and procedures are documented but improvements are required to meet ACE standards.</p> <p>AAA Documentation of a fire safety rules and procedures manual meets ACE standards</p> <ul style="list-style-type: none">* Fully covers the areas listed above (where applicable).* Has full management support and is an operational document* Is regularly upgraded or reviewed.															

Comments:

The site has a well documented "Safety Policy and Procedures Manual" which covers all areas as mentioned above. An "Emergency Procedures Manual" has also been developed for the site and covers all general evacuation procedures etc. These manuals are full working documents and are regularly reviewed and updated by management.

4.2 HOUSEKEEPING STANDARDS		AA
RATINGS:		
SD	Serious deficiencies.	
A	Average standard.	
AA	Good standard of housekeeping with minor deficiencies.	
AAA	Good standard of housekeeping with responsibilities and inspections documented. Meets ACE standard for fire safety.	

Comments:

Generally a good standard of housekeeping was noted throughout the site with adequate controls and inspections in place to monitor this. There were however 2 areas noted that require attention they are battery charging and the storage of idle pallets.

What needs to be done to Upgrade:

For upgrade to AAA the following areas should be addressed:-

The temporary battery charging of a fork lift with a pallet on was located in the kettle and jam section (1st floor). All charging of fork lifts should be conducted in the designated areas provided around the site. Charging in areas that are not adequately ventilated or clear of combustibles is not acceptable as a fault in the charger or battery could easily start a fire.

The storage of idle pallets under the canopy adjacent to the glass supply area should be reduced to a maximum of 2.1 m high. Currently pallets are stored to approximately 4 .0 m high. It is anticipated that the sprinkler system in this area is not adequate to protect the current height of pallet storage.

4.3 MAINTENANCE STANDARDS	AAA
Automatic Fire Sprinklers	AAA
Fire Detection and Alarm Systems	AAA
Fire Hydrant Systems	AAA
Fire Hose Reels	AAA
Portable Fire Extinguishers	AAA
RATINGS:	
SD	Serious deficiencies.
A	Basic standards of maintenance with major deficiencies.
AA	Average standards of maintenance carried out, maintenance is not documented.
AAA	Good standards of maintenance carried out by qualified personnel and maintenance documents are kept on site and up to date.

Comments:

All installed fire protection systems are generally maintained in accordance with current Code and Authority requirements. Maintenance log books are maintained for the fire alarm systems, sprinkler systems, hydrant/hosereel system and the extinguishers. National Fire and Security maintain the hydrant/hosereel system and the extinguishers while Fire Guard maintain the sprinkler and fire alarm systems. The sprinkler system pressures are also recorded daily in a log book by plant personnel.

4.4 ELECTRICAL INSTALLATION INSPECTIONS		AA
RATINGS:		
SD	Serious deficiencies.	
A	Electrical installation certified by an approved inspection agency to meet local standards, but obvious electrical hazards are noted.	
AA	Electrical installation certified by an approved inspection agency to meet local standards, no obvious electrical hazards are noted.	
AAA	Electrical installation certified by an approved inspection agency to meet local standards and annual inspections are carried out by certified inspection agencies.	

Comments:

All electrical work is carried out by suitably qualified contractors or by on site electricians. No obvious electrical hazards were observed. There are however no annual inspections undertaken of the electrical installation.

What Needs to be done to Upgrade:

For upgrade to AAA we would recommend that an annual inspection of the electrical installation be undertaken by a suitably qualified contractor. This inspection should include the following areas:-

- Condition of main switch boards and sub-boards.
- Condition of wiring.
- Thermographic testing of all switch boards.

Electrical installation inspections should be documented as part of the sites "Safety Policy and Procedures Manual".

4.5 CUTTING AND WELDING CONTROLS	AAA
RATINGS:	
SD	Serious deficiencies.
A	Cursory supervision of cutting and welding operations.
AA	All cutting, welding and other hot work operations well supervised by management, but permit system not used.
AAA	All cutting, welding and other hot work operation strictly supervised and controlled by use of permit system.

Comments:

A formal "Hot Work Permit" system utilising ACE cards is used throughout the site. Permits are issued and signed off by the Services Engineer.

4.6 SMOKING CONTROLS		AA
RATINGS:		
SD	Serious deficiencies.	
A	No smoking controls but no obvious major problems.	
AA	Formal smoking controls generally adhered to, no major deficiencies.	
AAA	"No Smoking" enforced throughout the plant areas other than specifically designated smoking areas.	

Comments:

A "No Smoking" policy is enforced throughout all plant and production areas only. Smoking is permitted in some offices the canteen and in the covered way/truck loading dock area as well as external to the building.

What needs to be done to Upgrade:

For upgrade to AAA we would recommend that the "No Smoking" policy be extended to cover all areas of the site with the exception of "Designated Smoking Areas" located external and clear of all buildings.

Of particular concern was the allowance of smoking both by truck drivers and employees in the covered way/truck loading bay. We would recommend that smoking in this area be banned immediately and appropriate signs posted.

4.7 SELF INSPECTION PROCEDURES		AA
A formalised self inspection program is an important fire safety management control. The following is a list of some of the areas that could be reviewed:		
FIRE HYDRANTS	Clear? Are standpipes, hose or nozzles in good condition?	
HOSE REELS	Clear? In good condition?	
FIRE ALARMS	Bells/sirens working? Mains power supply healthy? Indicator board lamps all working? Fire brigade or central station connections in order?	
EXTINGUISHERS	All present and correct? Not obstructed? In good order	
MAINTENANCE	Any temporary wiring? Any damaged electrical fittings? All oil tank catchpits clear & drain valves closed?	
FIRE DOORS	Not obstructed? All self closing devices working?	
SMOKING	Are smoking rules observed?	
FLAM. LIQUIDS	Excessive quantities in working area? Any damaged/loose earthing and bonding? Any accumulations of empty cans? Any waste or water in tank bunds? Any accumulations of soiled rags or waste?	
GAS CYLINDERS	Any idle cylinders in buildings? Any cylinders not secured? Any fittings or hose damaged?	
HOUSEKEEPING	Any accumulations of rubbish in buildings or yard? Any area untidy or congested? Any sprinkler heads obstructed? Any combustibles adjacent switchgear, heaters or battery charging?	
RATINGS:		
SD	Serious deficiencies.	
A	Inspection undertaken, but ad hoc or not documented.	
AA	Formal inspections carried out, but on an irregular or insufficient frequency basis.	
AAA	Formal inspections are carried out on a timely and frequent basis. Correction of deficiencies are followed up and documented.	

Comments:

A formal self inspection program is currently being developed and will be implemented early in 1996. Drafts of the proposed self inspection checklists were reviewed during our inspection and appeared to cover all areas required.

What needs to be done to upgrade:

For upgrade to AAA the proposed self inspection program should be implemented and the checklists completed and reviewed by management on a weekly basis. Checklist should be kept on file to be reviewed at the next ACE inspection.

4.8 FIRE PROTECTION TRAINING	AA
Portable Fire Extinguisher use	AA
Fire Hose Reels	AA
Special Hazard Equipment	AAA
Fire Hydrants	AAA
Special Hazard Response	AAA
Fire Team	AAA
RATINGS:	
SD	Serious deficiencies.
A	Ad hoc training of personnel, no records kept.
AA	Fully detailed training program with record keeping of personnel and adequate equipment, but minor improvements are required.
AAA	Fully detailed training programs in co-operation with public fire department or equivalent, adequate equipment. Training of personnel is documented and done at least annually.

Comments:

A well documented training program is in place which covers fire teams, area wardens and wardens.

Each of the 3 shifts (day, afternoon and night) has a fire team consisting of approximately 10 members. Each member of the fire team is given specific training on all fire protection equipment and general emergency scenarios. Training is done every three months to ensure that skills are maintained and to account for staff turn over.

General training of staff in the use of extinguishers and hosereels is limited to area wardens and wardens and does not cover all staff. This training is conducted annually by National Fire and Security.

What needs to be done to upgrade:

For an upgrade to AAA training in the use of extinguishers and hosereels should be provided to all production floor personnel and maintenance personnel. This training should be in addition to that described above for fire teams, area wardens and wardens. Given the number of personnel on the site we have not recommended that all office and administration personnel be given training so long as wardens in these areas are adequately trained.

4.9 WATCHMAN SERVICE/SECURITY	AAA
RATINGS:	
SD	Serious deficiencies.
A	Watchman service/detection is provided but with major deficiencies.
AA	Watchman service/detection is provided, but with minor deficiencies.
AAA	Watchman service/detection is provided without deficiencies.

Comments:

The site has a 24 hr/day manned gate house at the entrance to the site with a minimum of two guards on duty over night and 4 during the day. Regular recorded rounds are undertaken by the guards 24 hr/day at 17 points around the site at 90 to 120 minute intervals.

In addition to this the site is protected throughout by sprinkler/detection systems monitored off site by the Fire Brigade.

4.10 FIRE PROTECTION EQUIPMENT IMPAIRMENT PROCEDURES	AAA								
<p>Automatic fire suppression equipment is designed and installed with a specific purpose. To have this protection impaired or out of service for any reason (including maintenance) represents a reduction in fire protection.</p> <p>The recommended ACE standard is 4 step plan for impairments is as follows:</p> <ol style="list-style-type: none">1. Notify appropriate parties of the impairment including insurer and broker.2. Establish emergency procedures and take precautions during the impairment to provide temporary protection, eg. security guards.3. Conduct corrective efforts immediately and minimise impairment time.4. Do not conduct hazardous operations during impairments.									
<p>RATINGS:</p> <table><tr><td>SD</td><td>Serious deficiencies.</td></tr><tr><td>A</td><td>Impairment procedures are partly followed, not documented.</td></tr><tr><td>AA</td><td>Impairment procedures are followed, but not all documented.</td></tr><tr><td>AAA</td><td>Impairment procedures are followed and documented as specified above.</td></tr></table>		SD	Serious deficiencies.	A	Impairment procedures are partly followed, not documented.	AA	Impairment procedures are followed, but not all documented.	AAA	Impairment procedures are followed and documented as specified above.
SD	Serious deficiencies.								
A	Impairment procedures are partly followed, not documented.								
AA	Impairment procedures are followed, but not all documented.								
AAA	Impairment procedures are followed and documented as specified above.								

Comments:

All impairments to the sprinkler system are reported using the ACE impairment form.

4.11 WATER SUPPLIES FOR FIRE FIGHTING PURPOSES	AAA								
<p>RATINGS:</p> <table><tr><td>SD</td><td>Serious deficiencies.</td></tr><tr><td>A</td><td>Minimum of 1,900 L/min.</td></tr><tr><td>AA</td><td>Minimum of 2,800 L/min or less than ACE standards.</td></tr><tr><td>AAA</td><td>Minimum of 4,200 L/min or fully meets ACE standards.</td></tr></table> <p>Note: This criteria will be adjusted according to occupancy and fire load for each individual location.</p>		SD	Serious deficiencies.	A	Minimum of 1,900 L/min.	AA	Minimum of 2,800 L/min or less than ACE standards.	AAA	Minimum of 4,200 L/min or fully meets ACE standards.
SD	Serious deficiencies.								
A	Minimum of 1,900 L/min.								
AA	Minimum of 2,800 L/min or less than ACE standards.								
AAA	Minimum of 4,200 L/min or fully meets ACE standards.								

Comments:

The water supply to the site for fire fighting purposes is fed via a 150 mm connection to the 300 mm towns main in ABC Street.

Water supply information provided by the water supply authority for the town main in ABC Street indicated that a superior supply is available. The following information was provided:-

- Maximum pressure 96 m head
- Minimum pressure 52 m head
- 0 L/Sec @ 52 m head
- 10 L/Sec @ 52 m head
- 20 L/Sec @ 52 m head
- 30 L/Sec @ 52 m head
- 40 L/Sec @ 51 m head

4.12 FIRE BRIGADE FACILITIES		AAA
RATINGS:		
SD	Serious deficiencies.	
A	Organised retained (volunteer) brigade with adequate manpower and equipment with a response time of less than 20 minutes, or full time plant brigade with response time of between 15 and 20 minutes.	
AA	Full time retained public fire department or full time plant brigade with adequate manpower and equipment and a response time of less than 15 minutes.	
AAA	Full time public fire department or full time plant brigade with adequate manpower and equipment and a response time of less than 10 minutes.	

Comments:

Full time public Fire Brigade facilities with adequate manpower, equipment and access are within 10 minutes of the site.

4.13 AUTOMATIC SPRINKLER SYSTEMS			AA
SYSTEM DESIGN	SD	Serious deficiencies.	AA
	A	Meets Code requirements at time of installation but this design is considered not adequate for occupancy.	
	AA	Below current ACE requirements but not considered significant.	
	AAA	Meets current ACE requirements for this occupancy.	
SYSTEM COVERAGE	SD	Serious deficiencies.	AA
	A	Partial protection or full protection with unsatisfactory defects.	
	AA	100% coverage of critical areas with minor deficiencies. Unprotected areas.	
	AAA	100% coverage of critical areas with no defects.	

Comments:

Sprinkler protection is provided throughout the main manufacturing plant, storage areas, cool rooms and the office/research and development building. Generally the only areas which are not sprinkler protected are the engineering workshop area and the wax plant.

The sprinkler system is fed from the towns main in ABC Street which provides in-fill into 3 x 213,000 litre storage tanks. This water supply is pump boosted by an electric and diesel pumpset located adjacent to the tanks.

There are a number of sprinkler control valve stations located around the site with several dry pipe systems protecting the cool rooms.

4.13 AUTOMATIC SPRINKLER SYSTEMS (cont...).

A flow test of the sprinkler system conducted during our inspection gave the following results:-

Source:- Diesel Pump & Tanks.

Date Of Test:- November 30, 1995.

FLOW		PRESSURE (kPa)			R.P.M ACE Tacho	TEMP
In. Hg	L/MIN	SUCTION	DISCHARGE	NET		
0	0	-	-	-	-	-
6	5,150	90	775	685	1,793	60
10	6,750	80	775	695	1,722	70
15	8,450	75	750	675	1,650	70
20	9,950	75	740	665	1,646	70
30	12,500	75	700	625	1,626	70

Source:- Electric Pump & Tanks.

Date Of Test:- November 30, 1995.

FLOW		PRESSURE (kPa)			R.P.M ACE Tacho
In. Hg	L/MIN	SUCTION	DISCHARGE	NET	
0	0	-	-	-	-
6	5,150	90	775	685	1,793
10	6,750	80	775	695	1,722
15	8,450	75	750	675	1,650
20	9,950	75	740	665	1,646
30	12,500	75	700	625	1,626

Note:- Test were conducted at the pumphouse using a 150 mm annubar, AWR element and a mercury manometer. ACE pressure gauges were used on the suction and discharge of the pumps.

4.13 AUTOMATIC SPRINKLER SYSTEMS (cont...).

What needs to be done to upgrade:

There is no information available on site to indicate the design requirements of the sprinkler system. Given that the storage arrangements and heights of both finished goods and raw materials may have changed over the years since the shrinker system was designed it is recommended that a full hydraulic analysis of the sprinkler system be undertaken. There appears to be several areas where sprinklers should be installed in the racking systems however this should be confirmed once the hydraulic analysis is completed. This will ensure that the sprinkler system is adequate to protect the current storage arrangements.

We would also recommend that the sprinkler system be extended to protect the engineering workshop and the wax plant.

4.14 AUTOMATIC DETECTION SYSTEMS		AAA
SYSTEM DESIGN	<p>SD Serious deficiencies.</p> <p>A Meets Code requirements at time of installation but this design now considered not adequate.</p> <p>AA Below current ACE standard requirements but not considered significant.</p> <p>AAA Meets current ACE requirements.</p>	AAA
COVERAGE	<p>SD Serious deficiencies.</p> <p>A Partial protection or full protection with unsatisfactory defects.</p> <p>AA 100% coverage with minor deficiencies. Minor non critical unprotected area.</p> <p>AAA 100% coverage with no defects.</p>	AAA

Comments:

Automatic fire detection in the form of smoke/thermal detectors is provided throughout specific areas of the site only. Given that the site is also sprinkler protected this is considered adequate.

Detection is provided throughout the Office/Research & Development building and also in critical areas around the site such as switch rooms etc. Manual break glass fire alarms are also located throughout all areas of the site. The main site Fire Indicator Panel is located in the guard house and is monitored off site by the fire brigade.

Existing Halon systems in the PABX room, main switch room, computer switch room and cheese preparation control room have been replaced with NAFS III suppression systems.

4.15 FIRE HYDRANT SYSTEMS		AA
SYSTEM DESIGN	<p>SD Serious deficiencies.</p> <p>A Meets Code requirements at time of installation but this design now considered not adequate.</p> <p>AA Below current ACE standard requirements but not considered significant.</p> <p>AAA Meets current ACE standard requirements. Includes provision of a ring main and isolation valves.</p>	AA
SYSTEM COVERAGE	<p>SD Serious deficiencies.</p> <p>A Partial protection or full protection with unsatisfactory defects.</p> <p>AA 100% coverage with minor deficiencies. Unprotected area.</p> <p>AAA 100% coverage with no defects.</p>	AAA

Comments:

The hydrant system is fed via a 150 mm connection of the towns main in ABC Street. This connection is a combined supply which feeds both the hydrants around the site and the process water. The ring main for the sprinkler system which is pump boosted feeds two hydrants only at the northern end of the site. Generally hydrants are well located throughout the site and the coverage is considered adequate however there is no documentation which indicates pipework layout or isolation valve locations. A recent upgrade to the combined hydrant/process water mains has included the provision of monitored isolation valves and fire brigade booster connections.

A flow test of the northern most hydrant at the rear of the boiler house (not boosted by the sprinkler pumps) indicated a static pressure of 600 kPa and a residual pressure of 300 kPa @ 725 L/Min. This result would indicate that hydrants that are not boosted would be totally inadequate for fire fighting purposes.

4.15 FIRE HYDRANT SYSTEMS (cont...).

What needs to be done to upgrade:

We would recommend that a program be put in place to progressively upgrade the hydrant system by connecting existing hydrants to the sprinkler system pump boosted ring main. In the first instance it would be particularly prudent to connect those hydrants readily accessible to fire brigade personnel (ie. external to the building).

We would also recommend that plans of the hydrant system be developed showing hydrant/hosereel locations, isolation valves, pipework runs and town main connection details. This information is particularly valuable to fire brigade personnel in the event of an emergency and will aid in the maintenance of the system.

4.16 FIRE HOSE REELS		A
RATINGS:		
SD	Serious deficiencies.	
A	Partial coverage only.	
AA	Coverage complies with ACE standard requirements, except that additional protection required in some areas.	
AAA	Fully complies with ACE standards.	

Comments:

The fire hosereel system is fed from the hydrant/process water mains and provides partial coverage only throughout the site.

What needs to be done to upgrade:

For upgrade to AAA a review of the hosereel system coverage should be undertaken with a view to a progressive upgrade of the hosereel system to provide total coverage throughout the site and to comply with current Code and Authority requirements.

Fire hosereels provide excellent first aid fire fighting capabilities and are critical in the early attack of a fire.

4.17 PORTABLE FIRE EXTINGUISHERS		AAA
RATINGS:		
SD	Serious deficiencies.	
A	Insufficient coverage.	
AA	Some additional units required.	
AAA	Adequate numbers and well set out. Meets ACE standards.	

Comments:

Adequate numbers and types of extinguishers are located throughout the site.

4.18 FIRE CUT-OFFS	AAA
RATINGS:	
N/A	No cut-offs required.
SD	Serious deficiencies.
A	Does not meet ACE standards. Required cut-off available, deficient in rating or unprotected.
AA	Meets ACE standards, minor deficiencies.
AAA	Meets ACE standards.

Comments:

Generally the fire separation provided is adequate with the site made up of 4 major fire areas:-

- | | |
|--|---|
| Office/Research & Development building | - Separated by 2 hr fire wall approx. 10% values. |
| Main production building and stores | - Separated by 2 hr fire wall approx. 60% values. |
| Raw Mat. No. 2 & Fin. goods 2 & 3 | - Separated by 2 hr fire wall approx. 20% values. |
| Engineering workshop | - Separated by 2 hr fire wall approx. 10% values. |

4.19 EXPOSURES	AAA
RATINGS:	
N/A	None.
SD	Serious deficiencies.
A	Exposure protection not meeting ACE standards, difference significant.
AA	Exposure protection not meeting ACE standard requirements, difference not significant.
AAA	Exposure protection meets ACE requirements.

Comments:

Exposure protection for the site is considered to be adequate. To the north and east are SEC workshops and transformers which are well separated from the XYZ site. While to the south and west are Cook and ABC Streets respectively.

4.20 SPECIAL HAZARD MANAGEMENT/PROTECTION	AAA
RATINGS:	
SD	Serious deficiencies.
A	Special hazards management/protection does not meet ACE standards, major deficiencies.
AA	Special hazards management/protection does not meet ACE standards, minor deficiencies.
AAA	Special hazards management/protection meets ACE requirements.

Comments:

There are no requirements for extra special hazard management/protection at this site. Adequate controls are in place for the current hazards associated with operation of this site ie:-

7.6 m³ LPG tank and fork lift decanting area - Adequate separation and precautions.

Hazardous goods store and paint/solvent store - Adequate separation and protected by CO² and NAFS III.

Spray drying of cheese - Drier equipment is fitted with explosion relief panels and is sprinkler protected.

Hydrochloric acid storage - Stored in glass lined tanks with marble chip filled bund. Lime storage bin located nearby to neutralise spills.

Cheese drum waxing - Separated building (we have recommended that for extra protection this area be sprinklered).